

THE GENUS TRICHOSTEMA (LABIATAE) IN MEXICO

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Trichostema L. is a North American genus consisting of 16 species. At the time of the most recent taxonomic revision (Lewis, 1945) only 19 collections representing six species were known from Mexico. Least known of these was *T. purpusii*, the one species of this genus endemic to Mexico, which was represented only by the type specimen collected in 1907 and a second collection made in 1908.

Our present interest in the genus *Trichostema* in Mexico was generated in 1967 when one of us, at the instigation of Dr. Peter H. Raven, collected seeds of *T. purpusii* (*Rzedowski 24915*). Plants from these seeds were grown at UCLA in 1968 and flowered about six months after germination. To the great surprise of the senior author the flowers were bright rose-pink in color and not red or scarlet as he had thought probable from small traces of pigment in the flowers of the herbarium specimens previously known to him. Under cultivation the plants proved to be shrubs 1 m or more tall with erect herbaceous tips as much as 50 cm long rather than a suffrutescent perennial 4 to 5 dm tall as described earlier (Lewis, 1945).

Chromosomes of plants from this collection were examined using standard squash preparations of microsporocytes. Ten pairs of chromosomes were found consistently in all cells examined and no meiotic irregularities were observed. A haploid number of 10 also characterizes other species that occur in Mexico, namely *T. arizonicum* and the two shrubby species in sect. *Chromocephalum*, *T. lanatum* and *T. parishii* (Lewis, 1960). With the chromosome number of every species in the genus now known it is apparent that all of the perennial species have $n = 10$ except for *T. suffrutescens* in southern Florida, which like other species of sect. *Trichostema* has $n = 19$. The strictly annual sect. *Orthopodium*, represented in Mexico by *T. lanceolatum*, *T. micranthum*, and *T. austromontanum*, has a constant haploid number of seven except for the tetraploid *T. austromontanum* with $n = 14$ (Lewis, 1960).

With living plants available and with the chromosome number known, it became apparent that *T. purpusii* is closely related to *T. arizonicum*. The conspicuous differences in the color, size, and conformation of the flowers that earlier led to placing the two species in different monotypic sections do not, in living plants, obscure the close overall morphological

similarity of these two species. We are now convinced that they are much more closely related to each other than to other species in the genus. We have, therefore, as indicated in the listing below, included them in the same section.

Trichostema purpusii was known to us only from the State of Puebla when our material was grown. We have since learned from a paper by Williams (1973) that Dr. Robert Cruden collected this species in the State of Oaxaca in 1966 and in the same general area in 1971. The latter collection is the type of *Eplingia saxicola* Williams, the type species of the genus *Eplingia* Williams. We are truly sorry that a genus named in honor of a distinguished student of American Labiatae must be relegated

In the course of examining material of *Trichostema* from Mexico it became apparent that not only has the number of available collections increased significantly since the genus was revised in 1945, but among these collections are some that represent significant extensions of known range of the species concerned and the first collection of *T. austromontanum* from Mexico. We have summarized below our knowledge of the genus in Mexico with a key to the seven species known to occur there and a list of all collections from Mexico seen by us. We have not given full synonymy, descriptions, ranges of distribution in the United States, and other information available in earlier publications (Lewis, 1945; 1960).

KEY TO THE SPECIES OF *TRICHOSTEMA* IN MEXICO

- A. Plants annual; Baja California.
 B. Stamens 10–20 mm long. *T. lanceolatum*
 BB. Stamens 2–6 mm long.
 C. Stamens 2–3 mm long, straight or slightly curved, barely exerted. *T. micranthum*
 CC. Stamens 3–6 mm long, strongly arched and exerted. *T. austromontanum*
- AA. Plants perennial.
 B. Leaves linear; Baja California.
 C. Corolla tube 4–7 mm long. *T. parishii*
 CC. Corolla tube 9–14 mm long. *T. lanatum*
 BB. Leaves oblong to ovate.
 C. Flowers blue; stamens strongly arched; corolla tube 3–4 mm long. *T. arizonicum*
 CC. Flowers rose-pink; stamens nearly straight or slightly curved; corolla tube 9–10 mm long. *T. purpusii*

TRICHOSTEMA COLLECTIONS FROM MEXICO

Section PANICULATUM Lewis (Section *Rhodanthum* Lewis)

T. purpusii Brandegeë (*Eplingia saxicola* Williams). Oaxaca: Cerro del Camello, 2 km al S de Tepelmeme de Morelos, 2500 m, *Cruz Cisneros 2189*; Route 15 at K

376, ca 13.5 km NW of Tamazulapan, 2260 m, *Cruden 1094*; Route 190 between K 72 and 73, ca 5.5 km NW of Yanhuitlan, *Cruden 1950*. Puebla: Cerro de la Yerba, *Purpus 2559*; vicinity of Puebla, Cerro de Santa Maria de Zacatepec, *Bro. Arsène* in 1908; Ladera E del Cerro Tecajete, cerca de San Miguel Papaxtla, Municipio de Cholula, *Rzedowski 24915*; San Luis de los Pinos, municipio de Ajalpan, *Robert & Moreno 364*.

T. arizonicum Gray. Chihuahua: Colonia Juarez, Sierra Madre, *Jones* in 1903; Carretas, Municipio de Janos, *White 962*. Coahuila: Puerta de San Lazaro, Sierra de San Lazaro, Municipio de Castaños, *Muller 3055*. San Luis Potosí: 8 km al NE de Laguna seca, km 20 carretera San Luis Potosí-Antiguo Morelos, 2300 m, *Rzedowski 6352*. Sonora: San Bernardino, *Thurber* in 1852; Pinal, Sierra Charuco, *Gentry 1693*; Las Tierritas, *Phillips 656*; N of Horconcitas, *Phillips 866*; Puerto de los Aserraderos, *White 3221*; Cañon de El Temblor, *White 3373*; Valle de Teras, near La Angostura, *White 3549*; El Rancho del Roble, NE of El Tigre, *White 4212*.

Section CHROMOCEPHALUM Lewis

T. lanatum Benth. Baja California: Salada, *Orcutt 1345*; Aliso, *Brandege* in 1893; 5 mi NE of Cerro Coronel (32°20'N 116°51'W) 560 m, *Moran 21743*; 1 mi W of Buena Vista (31°02'N 115°48'W) 750 m, *Moran 15109*; Los Alisos, 9 mi W of Valladares (30°52'N 115°51'W) 525 m, *Moran 16245*; *Moran 16253*; 4 mi W of Valladares, 700 m (growing with *T. parishii*), *Moran 16427*; Rio Santo Domingo, Hamilton Ranch, *Moran 22387*; 20 mi E of Socorro, 30 mi N of Rosario, *Humphrey 6833e*; near Rancho El Ciprés (30°23'N 115°38'W) 475 m, *Thorne 31951*; 1.5 mi E of Rancho El Ciprés, 550 m, *Moran 11046*.

T. parishii Vasey. Baja California: Guadalupe Mountain, *Orcutt* in 1883; San Rafael Hills, *Orcutt* in 1889; Aliso, *Brandege* in 1893; Nachoguero Valley, *Mearns* in 1894; Tecate, *Orcutt* in 1884; *Fosberg 8396*; 8 mi SE of Tecate, *Munz 9487*; 13 mi E of Tecate, *Moran 14887*; 15 mi E of Tecate near road to Mexicali, 3000 ft, *Wiggins & Thomas 431*; near El Compadre, *Hohenthal 33*; Sierra Pinal, 3.7 mi N of El Compadre along road from Ojos Negros to Tecate, *Wiggins 21650*; 12 mi W of La Rumorosa, 4000 ft, *Hevly 2048 & Pitman 216*; Route 2, 59.3 mi W of main route to Mexicali, *McGill & Pinkava 8699*; Alaska, on road from Mexicali to Tijuana, *Cota* in 1932; 8 mi S of Machaguera on road to Hanson Lagoon, 3200 ft, *Wiggins 11254*; summit of Cerro Bola, 1275 m (32°19'N 116°40'W), *Moran 17821*; north slope of Sierra San Antonio Jenequa (Cerro Blanco) 800 m (32°05'N 116°30'W), *Moran 8415*; upper N slope of Cerro Blanco, *Moran 17603*; 1 mi S of Rosa de Castilla (32°02'N 116°08'W) 1200 m, *Moran 14945*; 15 mi E of Ensenada, *Kappler 819*; *Kappler 8820*; 20 mi E of Ensenada, *Wiggins 11870*; 20 mi S of Ensenada, *Flemming* in 1951; 1 mi E of San Antonio (31°59'N 116°36'W) 300 m, *Moran 13966*; Sierra Juarez, 7.5 mi SW of El Rayo (31°56'N 116°04'W) 1330 m, *Moran 16504*; Cañon Doña Petra (31°56'N 116°36'W) 250 m, *Moran 22803*; 1 mi N of Rancho Escondido (31°47'N 116°14'W) 800 m, *Moran 13927*; 2 mi NE of El Florido (31°32'N 116°02'W), *Moran 17691*; Pine Canyon near San Antonio Mesa, *Epling & Stewart* in 1936; *Epling & Robison* in 1940; 1.5–2.5 mi upstream from Rincon, 3 mi NE of Santa Catarina, 4250 ft, *Broder 504*; road from Valle Trinidad to Arroyo Calentura, 3400 ft, *Hohenthal 13*; ridge 10 mi SW of Valle Trinidad (31°20'N 115°53'W), *Moran 8221*; Sierra San Pedro Martir near Las Encinas, 6000 ft, *Powell* in 1958; 2 mi S of Tepi (31°08'N 115°45'W) 1000 m, *Moran 10971*; above Rancho San Pedro Martir on road to Sam's Corral (31°04'N 115°35'W) 1900 m, *Moran 14557*; 10 km W of Rancho San Jose (Melting Ranch), *Wiggins 20971*; vicinity of Rancho San Jose, 25 mi E of San Telmo, *Meling 15*; Campo Sotol (30°50'N 115°30'W) 1700 m, *Wiggins 16560*; 5 mi E of Rancho San Jose along old wagon road to old mining camp of Socorro, 3500 ft, *Wiggins 9793*; old Socorro mining camp E of Meling Ranch, 4200 ft, *Blakley 7153*; 4 mi W of Valladares (30°53'N 115°45'W)

725 m (growing with *T. lanatum*), *Moran 16426*; 2 mi W of ex-Misión San Pedro Martir (30°47.5'N 115°29'W) 1450 m, *Moran 22172*; Arroyo 3 mi S of Santa Eulalia (30°40'N 115°19'W) 1800 m, *Moran 11159*.

Section ORTHOPODIUM Bentham

T. austromontanum Lewis. Baja California: Near 30°55'N 115°38'W, 875 m, *Moran 16320*.

T. lanceolatum Bentham. Baja California: Near large pond 1 mi E of Tijuana Airport tower, *Moran 16106*; 24 mi N of Ensenada, *Wiggins & Gillespie 3986*.

T. micranthum Gray. Baja California: Hansen's Ranch, *Orcutt 1247*; Rancho La Botella (31°57'N 115°50'W) 1680 m, *Moran 16474*; Sierra Juarez, 1.5 mi S of Rancho Marcos (31°58'N 115°52'W) 1700 m, *Moran 13503*; 3 mi S of Rancho Marcos, *Moran 13598*.

LITERATURE CITED

- LEWIS, H. 1945. A revision of the genus *Trichostema*. *Brittonia* 5:276-303.
 ———. 1960. Chromosome numbers and phylogeny in *Trichostema*. *Brittonia* 12:93-97.
 WILLIAMS, L. O. 1973. *Eplingia*, a new genus of the Labiatae from Mexico. *Fieldiana, Botany* 36: 17-20.

BOOKS RECEIVED AND LITERATURE OF INTEREST

Intermountain flora: vascular plants of the Intermountain West, U. S. A. By ARTHUR CRONQUIST, ARTHUR H. HOLMGREN, NOEL H. HOLMGREN, JAMES L. REVEAL, and PATRICIA K. HOLMGREN. Vol. 6: the monocotyledons. 584 pp. 1977. Columbia University Press, New York. \$54.00.

Flora of the Black Hills. By ROBERT D. DORN. Illustrations by JANE L. DORN. x + 377 pp. 1977. Robert D. Dorn, P. O. Box 1471, Cheyenne, Wyoming 82001. \$7.50 paperbound. Shipping extra on foreign and credit orders.

Atlas of United States' Trees, vol. 4. Minor Eastern Hardwoods. By Elbert L. Little, Jr. U. S. D. A. Misc. Publ. 1342: 17 pp., 230 maps. 1977. \$8.75.

Rare and local trees in the national forests. By Elbert L. Little, Jr. U. S. D. A. For. Serv. Conserv. Rep. 21: 14 pp. 1977.

A provisional checklist of species for Flora North America (revised). Ed. by Stanwyn G. Shelter and Laurence E. Skog. Monographs in Systematic Botany from the Missouri Botanical Garden, vol. 1; Flora North America Report 84: xix + 199 pp. 1978. \$6.50.

Intermountain biogeography: a symposium. Ed. by Kimball T. Harper and James L. Reveal. Great Basin Naturalist Memoirs 2:1-268. 1978. \$15.00. Brigham Young University, Provo, UT 84602.

A revision of the Mexican Central American species of Cavendishia (Vacciniaceae). By James L. Luteyn. *Memoirs of the New York Botanical Garden* 28(3):1-138. 1976. \$18.95.

A revision of the genus Declieuxia (Rubiaceae). By Joseph H. Kirkbride, Jr. *Memoirs of the New York Botanical Garden* 28(4):1-87. 1976. \$10.95.